



# AYURVEDIC MEDICINES FOR THE MANAGEMENT OF IRRITABLE BOWEL SYNDROME: A SYSTEMATIC REVIEW

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## ABSTRACT

Definition of Irritable bowel syndrome (IBS) is a functional bowel disorder characterized by altered bowel habits and pain or discomfort in the abdomen without detectable structural abnormalities. In IBS severity of symptoms varies and can significantly impair quality of life, resulting in high health care costs. This study systematically reviewed the published clinical research in PubMed on Ayurvedic medicines and their reliable mechanisms of action in controlling IBS. Rather the combinations of single-drug formulations mentioned in our classical textbooks may be more effective. And different clinical trials must be needed to evaluate the effects of Ayurvedic preparations on IBS.

**KEYWORDS:** Ayurvedic Single Drugs, Ayurvedic Formulations, Irritable Bowel Syndrome.

## 1. INTRODUCTION:

### 1.1. Background:

Irritable bowel syndrome (IBS) is interpreted as a functional bowel disorder characterized by altered bowel habits and pain or discomfort in the abdomen in the absence of detectable structural abnormalities; Throughout the world, about 10 to 20% of adults and adolescents have symptoms consistent with IBS; Most of the IBS patients have their first symptoms before age 45 but it affects all ages; Women are identified with IBS two to three times as often as men and make up 80% of the population with severe IBS<sup>(1)</sup>.

### 1.2. Statement of the problem:

In IBS severity of symptoms varies and can significantly impair quality of life, resulting in high health care costs. Due to dissatisfaction with conventional IBS treatments, complementary and alternative medicines (CAM) are becoming attractive options for many patients; Of the various CAM interventions, the Traditional Indian Medicine Ayurveda, a Whole Medical System, is increasingly used worldwide and is recognized by the World Health Organization as medical science; An expanding number of IBS patients are beginning to receive CAM in the world, The most frequently used are herbal remedies (43%)<sup>(2)</sup>.

### 1.3. Objective of research:

This study aimed to systematically review the published clinical research in PubMed on Ayurvedic medicines and their reliable mechanisms of action in controlling IBS.

## 2. MATERIAL AND METHODS:

### 2.1. Searched databases:

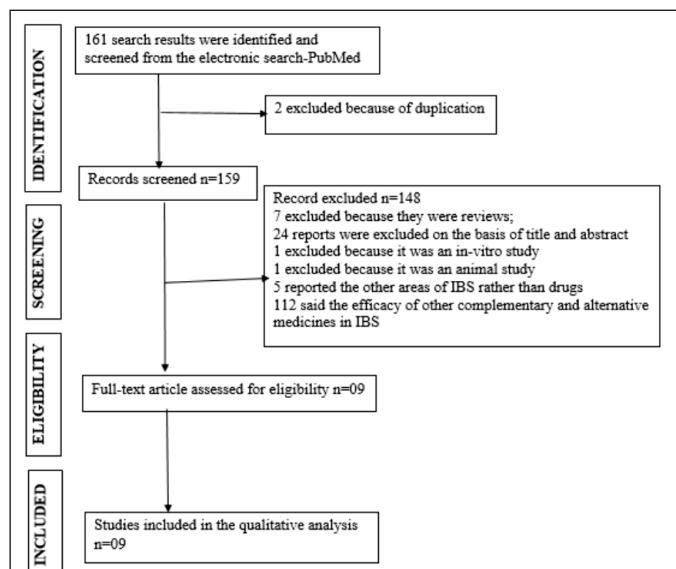
Ayurvedic medicine's efficacy in the management of IBS has been evaluated. For this purpose, electronic databases, including PubMed, were searched to obtain studies giving human evidence of the efficacy of Ayurvedic drugs in the treatment of IBS. Collected data were for the years 2001 to 2021 (up to July). The search terms were: "herbal drugs and IBS", "Ayurveda and IBS", or "Ayurvedic drugs and IBS", and "Ayurvedic formulation and IBS". Also reviewed the reference lists of retrieved articles for additional applicable studies.

### 2.2. Inclusion and exclusion criteria:

Each article's title and abstract were examined. Studies assessing CAM other than Ayurvedic drugs and formulations, duplicates, reviews, and studies investigating gastrointestinal diseases other than IBS were excluded.

### 2.3. Quality assessment:

Analysis and quality evaluation of the literature was performed. Out of 161 records found in the PubMed databases; 9 related studies were included in the final analysis (Figure 1). This review has focused on the single Ayurvedic drugs in IBS treatment, such as Aloe vera, Curcuma longa, Ginger, and combinations.



**Figure 1: Flow chart showing the selection process and exclusion criteria**

## 3. RESULTS AND DISCUSSION:

### 3.1 Ginger:

The study was a randomized, controlled, parallel-group design in which 15 participants were randomly allocated to each of three arms: Placebo, one gram ginger daily, or two grams ginger daily. The duration of treatment was 28 days; A significant reduction in symptoms by 34.8% and 26.4%, respectively seen in Placebo and 1 gram ginger groups. Several treatment responders between groups were not different (57.1% placebo, 46.7% 1 gr ginger, 33.3% 2 grams ginger; p>.05); Adequate relief was reported in the Placebo group, and both the ginger groups were equal, and it is 53.3% (p>.05); This double-blind, randomized controlled pilot study proposes ginger is well tolerated but did not execute better than Placebo<sup>(2)</sup>. Other studies relieve the importance of ginger in intestinal hypersensitivity of diarrhoea-predominant irritable bowel syndrome by inhibiting pro-inflammatory reactions<sup>(3)</sup>. Ginger has Agni Depana and Pachana properties, and it is well represented in the formulations that have action in Koshtasritha Rogas. It shows the importance of ginger in IBS-like diseases. But the results may vary with the medium of usage, combination of drugs, stage of disease, and insufficient sample size.

### 3.2 Aloe Vera:

The study design of Aloe vera is multicentre, randomized, double-blind, cross-over placebo-controlled; Participants were randomized to *Aloe vera*, washout, placebo or placebo, washout, *Aloe vera*; Each 60 mL of preparation was taken twice a day, orally. Using the Gastrointestinal Symptoms Rating Score, Irritable Bowel Syndrome Quality of Life and EuroQol patient quality of life was measured; Only 47 completed all questionnaires, and both study arms out of random-

ized 110 patients. In terms of quality of life, no difference between the placebo and Aloe vera treatment shows in statistical analysis; This study was incapable of showing that Aloe vera was superior to placebo in improving quality of life; the Power of the study to detect a clinically important difference may have impacted due to dropouts and other confounding factors<sup>(4)</sup>.

Another study design for Aloe vera was double-blind, placebo-RCT; Symptoms of IBS were assessed at baseline, 1 and 3 months; Fifty-eight patients were randomized, 49 completed the protocol for 1 month and 41 to 3 months; Eleven of thirty-one (35%) Aloe vera participants, and 6 of 27 (22%) placebo participants responded at 1 month ( $p = 0.763$ ); Diarrhoea predominant participants showed a trend towards a response to treatment at 1 month (10/23 V 2/14,  $p = 0.07$ ); The study says that there was no proof that Aloe vera benefits patients with IBS; However, the study also states that we could not rule out the possibility that improvement happened in patients with diarrhoea or alternating IBS whilst taking Aloe vera; Further investigations are necessary for patients with diarrhoea-predominant IBS, in a less complex group of patients<sup>(5)</sup>.

### 3.3 Curcuma longa:

A partially blinded, randomized, two-dose a pilot study was carried out to assess the effects of Curcuma longa on irritable bowel syndrome; Five hundred participants were screened for IBS using the Rome II criteria; Two hundred and seven suitable participants were randomized; Standardized turmeric extract containing one or two tablets taken daily for 8 weeks; Irritable bowel syndrome prevalence decreased significantly between screening and baseline at 41% and 57% respectively in both groups, with a further significant drop of 53% and 60% in the one- and two-tablet groups respectively between baseline and after treatment ( $p < 0.001$ ). Abdominal pain/discomfort scores reduced significantly by 22% and 25% in the one- and two-tablet groups, respectively, as revealed in post-study analysis, the difference tending toward significance ( $p = 0.071$ ). There was significant progress in all bar one of the IBSQOL scales of between 5% and 36% in both groups. Approximately two-thirds of all participants reported improved symptoms after treatment, and there was a favourable shift in self-reported bowel

patterns. This study shows no significant differences between groups<sup>(6)</sup>.

### 3.4 Mentha piperita:

In a double-blind study, fifty-seven patients with irritable bowel syndrome were treated with peppermint oil, i.e., two enteric-coated capsules twice per day or placebo for 4 weeks. Symptoms were assessed before therapy, after the first 4 weeks of treatment, and 4 weeks after the end of treatment. The symptoms evaluated were: abdominal pain or discomfort, abdominal bloating, constipation, diarrhoea, the feeling of incomplete evacuation, the passage of gas or mucus, pain at defecation, and urgency at defecation. After the first 4 weeks of treatment, compared with 38% in the placebo group ( $P < 0.009$ ), 75% of the participants in the peppermint oil group showed a >50% reduction of basal (before therapy) total irritable bowel syndrome symptoms score. With peppermint oil after the first 4 weeks of treatment and at 4 weeks after the end of the treatment compared with before treatment, found a statistically significant reduction of the total irritable bowel syndrome symptoms score before treatment: 2.19+/-0.13, after the first 4 weeks of therapy: 1.07+/-0.10\*, 4 weeks after the end of therapy: 1.60+/-0.10\*, \* $P < 0.01$  compared with before treatment, mean+/-S.E.M.), while found no change with the placebo. The study concluded that 4 weeks of treatment with peppermint oil improves abdominal symptoms in patients with irritable bowel syndrome<sup>(7)</sup>.

Another study was a randomized, double-blind placebo-controlled study conducted on 90 participants; Participants took one capsule of enteric-coated, delayed-release peppermint oil or placebo three times daily for 8 weeks; Evaluated their symptoms and quality of life after the first, fourth, and eighth weeks; The number of participants free from abdominal discomfort or pain changed from 0 at week 0 to 14 at week 8 in the peppermint oil group and from 0 to 6 in controls ( $P < 0.001$ ); As compared to controls the severity of abdominal pain was also reduced significantly in the peppermint oil group. Furthermore, peppermint oil significantly improved the quality of life; There was no significant adverse reaction; Study concluded that Peppermint oil is safe and effective as a therapeutic agent in participants with IBS suffering from abdominal pain or discomfort<sup>(8)</sup>.

**Table 1: Ayurvedic herbs used for treatment of irritable bowel syndrome**

Ayurvedic medicine	Part used	Type of study	Model	Results	Ref.no
Ginger	rhizome	Double-blind randomized controlled pilot trial	IBS patients	No difference between treatment and placebo groups	(2)
Aloe Vera	Gel	Cross-over, placebo-RCT	IBS patients	No difference between treatment and placebo groups	(4)
		Double-blind placebo-RCT	IBS patients	No difference between treatment and placebo groups	(5)
Curcuma longa	Rhizome	Pilot study, partially blinded, RCT randomized	IBS patients	No difference between treatment and placebo groups	(6)
Mentha piperita (MP)	Oil	Double-blind, placebo-RCT	IBS patients	Improves abdominal symptoms in patients with irritable bowel syndrome	(7)
	Oil	A randomized double-blind placebo-controlled study	IBS patients	effective and safe in participants with IBS suffering from abdominal pain or discomfort.	(8)

### 3.5 Bilvadi Leha:

An open-label, single group, and non-controlled clinical trial are carried out with Bilvadi Leha; In this clinical trial, 51 participants with IBS have registered, out of which 46 participants completed the treatment; Duration of administration of Bilvadi Leha was 12 weeks; Out of 46 participants, found positive response to therapy in 37 (80.43%) participants, 7 (15.21%) participants showed partial response to treatment and 2 (4.34%) participants reported no reaction to the medicine; The study shows statistically significant improvement in the IBS severity score as well as all the clinical features of IBS; There was no adverse drug reaction perceived during the period of trial; Further studies with larger sample size should be carried out in different places with a standard control drug to obtain more input the action of this novel drug compound in management IBS<sup>(9)</sup>.

### 3.6 Murraya koenigii, Punica granatum and Curcuma longa:

*Punica granatum* (pomegranate), *Murraya koenigii* (curry), and *Curcuma longa* (turmeric) are used to make Ayurvedic herbal compound, and it is compared to a placebo in participants with diarrhoea-predominant IBS. This study was conducted as a randomized placebo-controlled crossover trial with a randomized sequence of medicine and placebo for each participant. Participants and outcome assessors were blinded. Participants were advised to ingest the decoction twice daily for 4 weeks. IBS symptom intensity was the primary outcome measure; Including quality of life, anxiety, depression, compliance, and safety in the secondary outcomes. The trial included 32 IBS participants. Eleven participants dropped out during the trial resulting in 37 completing the treatment and 35 completing placebos. No group differences were found in IBS symptom intensity between Ayurvedic herbal medicine and placebo (difference 24.10; 95% CI: -17.12; 65.32,  $p=0.26$ ). The same applied to secondary outcomes. The study concluded that *Punica granatum*, *Murraya koenigii*, and *Curcuma longa* containing Ayurvedic herbal preparation appeared to be no more effective in improving diarrhoea-predominant irritable bowel symptoms than a placebo<sup>(10)</sup>.

### 3.7 Ayurvedic vs. Conventional Nutritional Therapy Including Low-FODMAP Diet for Patients with Irritable Bowel Syndrome—A Randomized Controlled Trial:

To compare the effects of conventional and Ayurvedic nutritional therapy in participants with irritable bowel syndrome (IBS); Sixty-nine participants with IBS were randomized to Ayurvedic ( $n = 35$ ) or conventional nutritional therapy according to the recommendations of the German Nutrition Society, including the low-FODMAP diet ( $n = 34$ ); Trial visits took place before intervention and after 1, 3, and 6 months; After 3 months, estimated marginal means for IBS-SSS reductions were 72.7 [95% CI = 38.8-106.7;  $p < 0.001$ ] in the conventional group and 123.8 [95% confidence interval (95% CI) = 92.8-154.9;  $p < 0.001$ ] in the Ayurvedic group; Compared to the conventional therapy group, the IBS-SSS reduction was significantly higher in the Ayurveda group (estimated marginal mean = 51.1; 95% CI = 3.8-98.5;  $p = 0.035$ ) and clinically meaningful; After 3 months, sixty-eight percentage of the variance in IBS-SSS reduction can be explained by treatment, 6.5% by patients' expectations for their therapies, and 23.4% by IBS-SSS at pre-intervention; Both therapies are equivalent in their contribution to the outcome variance. Here no significant group differences in any secondary outcome measures; The study concluded that IBS participants seem to benefit significantly from Ayurvedic or conventional nutritional therapy; The results permit further studies with larger sample sizes and longer-term follow-ups<sup>(11)</sup>.

## 4. CONCLUSION:

This review evaluated various Ayurvedic drugs, preparations, and possible mechanisms to treat IBS. In IBS, *Mentha piperita* plays a vital role in controlling abdominal pain. *Aloe vera*, *ginger*, and *Curcuma* display different mechanisms such as prosecretory activity, anti-inflammatory activity, and normalising gastrointestinal motility in IBS management. *Bivadi Leha* shows improvement in IBS symptoms. According to numerous parameters that effect the pathophysiology of IBS, it is believed that Ayurvedic formulations containing several drugs can be more beneficial than single drugs. At the same time, single

drug studies mislead the scientific community that the Ayurvedic drugs do not have a role in controlling IBS symptoms. Acharyas' concept of combining ayurvedic drugs and making a formulation for a disease is not nearly like mixing 2 or 3 drugs. Based on many criteria like Rasapanchaka, it is assigned. So such combination of drugs not mentioned in Ayurveda classical textbooks used in the name of Ayurvedic herbs will also mislead the scientific fraternity. However, different clinical trials must be needed to evaluate the effects of Ayurvedic preparations on IBS. Black box design may be more helpful in the Ayurvedic field as Ayurveda is an individualistic medicine.

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